DTC	P0787	Shift / Timing Solenoid Low (Shift Solenoid Valve ST)

DTC	P0788	Shift / Timing Solenoid High (Shift Solenoid Valve ST)

DESCRIPTION

Shift solenoid valve ST is switched ON/OFF by a signal from the ECM so that letting in or out timing of 2nd brake is adjusted by operating the orifice control valve. Therefore, shift solenoid valve ST operates when letting in or out the reverse clutch.
If the shift solenoid ST is broken, the shift shock increases.

DTC No.	DTC Detection Condition	Trouble Area
P0787	ECM detects short in solenoid valve ST circuit 2 times when solenoid valve ST is operated (1 trip detection logic)	• Short in shift solenoid valve ST circuit • Shift solenoid valve ST • ECM
P0788	ECM detects open in solenoid valve ST circuit 2 times when solenoid valve ST is not operated (1 trip detection logic)	• Open in shift solenoid valve ST circuit • Shift solenoid valve ST • ECM

MONITOR DESCRIPTION

This DTC indicates an open or short in the shift solenoid valve ST circuit. The ECM commands gear shifts by turning the shift solenoid valves ON/OFF. When there is an open or short circuit in any shift solenoid valve circuit, the ECM detects the problem, illuminates the MIL and stores the DTC. Also, the ECM performs the fail-safe function and turns the other normal shift solenoid valves ON/OFF. In case of an open or short circuit, the ECM stops sending current to the circuit (see page AX-32).

MONITOR STRATEGY

AX

Related DTCs	P0787: Shift timing solenoid valve ST/Range check (Low resistance) P0788: Shift timing solenoid valve ST/Range check (High resistance)
Required sensor/Components	Shift solenoid valve ST
Frequency of operation	Continuous
Duration	2 times
MIL operation	Immediate
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0787: Range check (Low resistance)

The monitor will run whenever the following DTCs are not present	None
Solenoid	ON
Time after solenoid OFF to ON	More than 0.008 sec.

P0788: Range check (High resistance)

The monitor will run whenever the following DTCs are not present	None
Solenoid	OFF
Time after solenoid ON to OFF	More than 0.008 sec.

TYPICAL MALFUNCTION THRESHOLDS

P0787: Range check (Low resistance)

Intelligent power MOS diagnosis fail signals detected while the solenoid is operated	Fail at solenoid resistance: 8 Ω or less

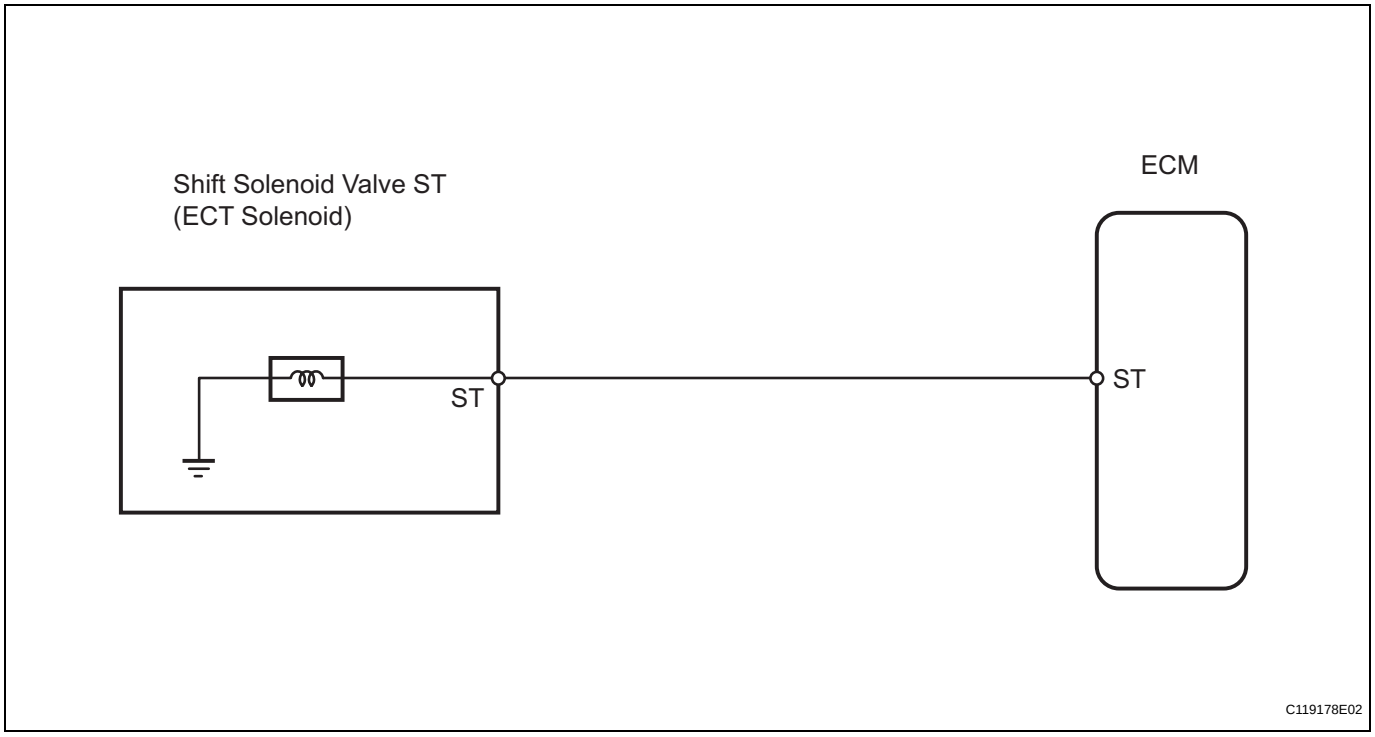
P0788: Range check (High resistance)

Intelligent power MOS diagnosis fail signals detected while the solenoid is not operated	Fail at solenoid resistance: 100 kΩ or more

COMPONENT OPERATING RANGE

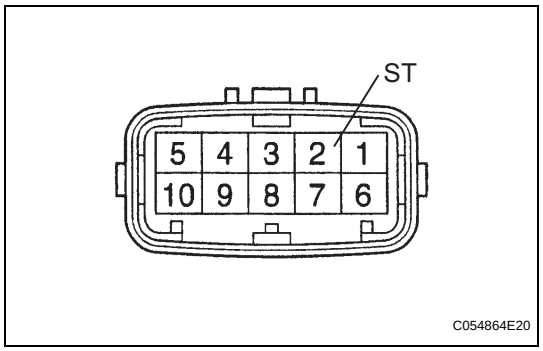
Shift solenoid valve ST	Resistance: 11 to 15 Ω at 20°C (68°F)

WIRING DIAGRAM



AX

1	INSPECT TRANSMISSION WIRE (SHIFT SOLENOID VALVE ST)



(a) Disconnect the E1 wire connector.
(b) Measure the resistance of the transmission wire.

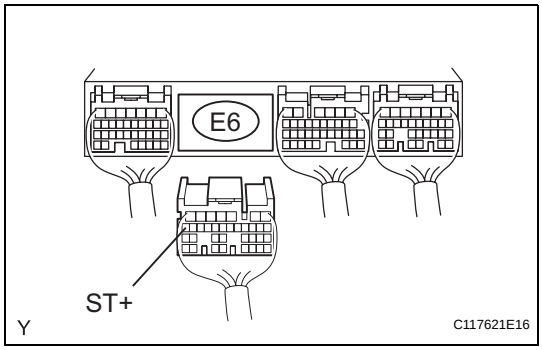
Standard resistance

Tester Connection	Condition	Specified Condition
2 (ST) - Body ground	20°C (68°F)	11 to 15 Ω

NG → **Go to step 3**

OK

2	CHECK WIRE HARNESS (TRANSMISSION WIRE - ECM)



(a) Disconnect the E6 ECM connector.
(b) Measure the resistance of the wire harness side connector.
Standard resistance

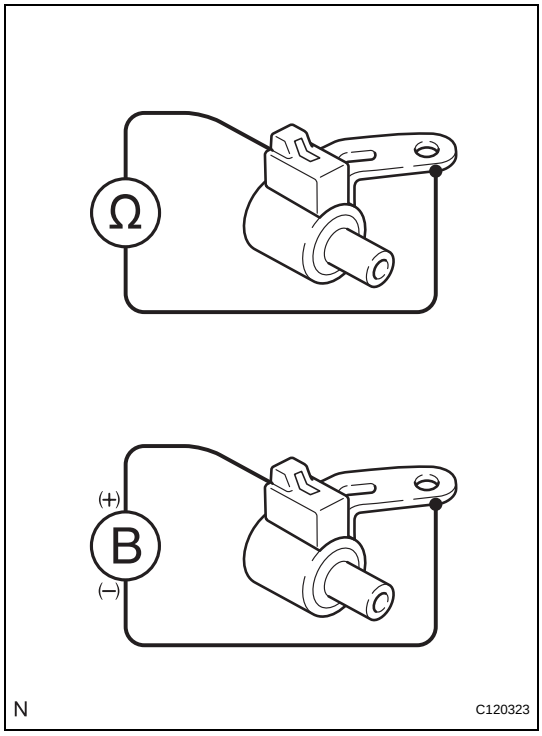
Tester Connection	Condition	Specified Condition
E6-19 (ST) - Body ground	20°C (68°F)	11 to 15 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ECM

3	INSPECT SHIFT SOLENOID VALVE ST



(a) Remove the shift solenoid valve ST.
(b) Measure the resistance of the solenoid valve.
Standard resistance:
11 to 15 Ω at 20°C (68°F)
(c) Connect the battery's positive (+) lead to the terminal of the solenoid connector, and the negative (-) lead to the solenoid body.
(d) Check the operating noise of the solenoid valve.
OK:
Solenoid makes operating noise.

NG → **REPLACE SHIFT SOLENOID VALVE ST**

OK

REPAIR OR REPLACE TRANSMISSION WIRE

AX